GENERAL PEDESTRIAN AND BICYCLE GUIDE

I. PURPOSE

The purpose of this document is to provide department policy on accommodations for pedestrians and bicyclists. This policy is consistent with the Department's long range transportation plan, the Department's strategic plan to "Develop a Total Transportation Focus", the Department's name change to Missouri Department of Transportation (MODOT) and in keeping with the spirit of the Transportation Equity Act of the 21st Century (TEA 21). Upon adoption, it is intended that further guidance will be provided. This policy will impact many divisions including but not limited to transportation planning, preliminary studies, right of way, design, bridge, construction, maintenance, traffic, risk management and chief counsel's office. The historical department sidewalk policy has been generally limited to replacement of existing sidewalks when disturbed during construction or maintenance activities. There have been no policies or standards in regard to bicycle facilities. The existing status of department policies creates difficulties when reviewing department funded projects such as Enhancement projects, and others. Some districts have planned for pedestrian and bicycle facilities to meet the demands of our system users. In other cases these accommodations have been required due to federal regulations such as Americans with Disabilities Act (ADA) and the National Environmental Protection Act (NEPA). This guide will also serve to familiarize staff on the details of pedestrian and bicycle planning and design.

II. POLICY

A. Needs Assessment

This policy encourages districts to consider and provide for pedestrian and bicycle facilities when deemed appropriate. Consideration should be given to the provision of pedestrian and/or bicycle accommodations during preliminary studies, design and construction when any of the following exist:

- If the local jurisdiction has adopted a pedestrian/bicycle policy or facilities plan or otherwise requested by the local jurisdiction.
- When pedestrian/bicycle traffic generators are near MODOT transportation projects. (These generators include neighborhoods, employment centers, shopping centers, schools, parks, etc.)
- When there is evidence of pedestrian and/or bicycle traffic and the local community supports the incorporation of facilities.
- The route provides access across a natural or man-made barrier, i.e., bridges over rivers, roadways or railroads or under access-controlled facilities and roadways.
- If there is public support through local planning organizations for these facilities.

- The design and installation of pedestrian and bicycle facilities is at the sole discretion of the director or designee. Documentation should be developed on all projects for the decision to provide or not provide pedestrian and/or bicyclist accommodations.

B. Funding

Additional costs for new pedestrian and bicycle facilities, including right-of-way, construction and maintenance may be funded by the department, local jurisdictions, Enhancement funds, other funding sources and/or a combination of these. Funding arrangements and agreements will be handled on a case by case basis. Funding of such projects from the state road fund shall only be provided on MHTC right-of-way.

C. Maintenance

MoDOT is legally responsible for maintaining bicycle and pedestrian facilities that are located on MHTC right-of-way. Local jurisdictions, or others, should be encouraged to perform maintenance of these facilities by agreement with MoDOT. MoDOT will ensure proper maintenance is provided.

Agreements with local jurisdictions and/or others should be used to address maintenance issues for separate bicycle and/or pedestrian facilities constructed off of MoDOT right-of-way. The agency responsible for maintenance shall be established prior to construction.

III. DIVISION CRITERIA

A. Design

Pedestrian/Bicycle Facilities: Numerous strategies are available to provide improved operating facilities for non-motorized travelers. These include sidewalks, bicycle paths, bicycle lanes, wide shared lanes and bicycle lanes on shoulders. Typical designs are provided with this document for both guidance and review/comment. Until further notice the AASHTO *Guide for the Development of Bicycle Facilities* and FHWA-RD-92-073 *Selecting Roadway Design Treatments to Accommodate Bicycles* will provide the department with guidance for bicycle and multi-use facilities. Staff in the Design Division and Transportation Planning and Policy Development can assist with further information. Following are descriptions and guidelines for use of several classifications of pedestrian/bicycle facilities (see Table 1 for further guidance).

Sidewalks: Sidewalks are constructed where existing sidewalks are disturbed by highway construction and may be provided based on the needs assessment previously outlined. Along arterial streets where outer roadways are to be constructed to connect local streets that would otherwise dead-end, and where such intersecting streets have sidewalks that formerly connected to cross streets with sidewalks, it is proper to consider sidewalk construction along the outer roadways on a needs basis as a replacement of existing facilities. Where the curb is separated from the parallel sidewalk by a parkway (border), all house walks shall be extended across the parkway (see Standard Plan 608.10). When provided, sidewalks should have a minimum width

of 1.2 m (4 feet), with 1.5m (5 feet) desirable, and thickness of 100 mm (4"). Exceptions are as follow:

- Sidewalks across private approaches shall be 175 mm (7") thick of variable width.
- Sidewalks across streets, sideroads, alleys of commercial approaches shall be 200 mm (8") thick of variable width. Housewalks shall be 100 mm (4") thick and a minimum of 1.0 m (3 ft) wide.
- Steps to house shall be a minimum of 1.0 m wide.
- Steps to house shall be a minimum of 1.0 m (3 ft) wide.
- Steps and housewalks shall be a width to match the existing width.
- Steps other than house steps shall be a width to fit a particular condition.
- With 4' wide sidewalks, 1.5 m x 1.5 m (5' x 5') passing space should be provided at reasonable intervals not to exceed 60 m (200').
- An intersection of two or more sidewalks is considered an acceptable passing space.
- A sidewalk proposed within 2 ft [0.6 m] of a curb should be adjacent to the curb, a minimum of 6 ft.[1.8 m] wide and located behind a barrier curb.

Curb and Sidewalk Ramps: Curb and sidewalk ramps shall be designed in accordance with the standard plans, or varied to fit the needs at a particular locations. If a particular curb ramp differs from the standard plans, the ramp shall be detailed on the plans. The following criteria apply to all curb ramp situations:

- Curb ramps shall be paid for as Concrete Sidewalk, 100 mm (4"). The designer should estimate the square meters (square yardage) for each curb ramp.
- Curb ramps shall have a clear width of 1.5 m (5 ft), exclusive of flared sides.
- If a sidewalk ramp has a rise greater than 150 mm (6") or a horizontal length greater than 1.8 m (6 ft), handrails shall be provided on both sides.
- The maximum rise for any ramp shall be 750 mm (30").
- Handrails are not required on curb ramps.
- The least possible slope shall be used for any ramp.
- The maximum slope of a ramp in new construction shall be 1:12.
- Ramps shall have a level landing at the top of each run.
- The landing shall have the same width as the ramp and a minimum length of 1.5 m (5 ft).
- Transitions from curb ramps to sidewalks, gutters or streets shall be flush and free of abrupt changes.
- Maximum slopes adjoining a curb ramp shall not exceed 1:20.
- Raised islands in crosswalks shall be cut through level with the street or have curb ramps at both sides and a level area at least 1.2 m (4 ft) long between the curb ramps.
- Sidewalk ramps should be provided at locations where steps occur, such as at the ends of bridges having sidewalks across the bridge or at pedestrian grade separations.
- In the case of retrofitting a curb ramp where pedestrians must walk across the ramp, the ramp shall have flared sides sloped at a maximum of 1:10.
- If a level landing cannot be constructed in a retrofit situation, then the flared sides shall have a 1:12 maximum slope.

Mid-block pedestrian crossings: The potential for pedestrian demand to cross multilane facilities with lengthy distances between signalized intersections should be considered in design. For instance, near universities or shopping centers, there may be high demand for pedestrians to cross a roadway without a nearby signalized intersection. A raised median might be the preferred approach to provide a safer crossing for pedestrians. A pedestrian underpass or overpass might also be considered.

Bicycle Path: A bicycle path is a bikeway physically separated from motorized vehicular traffic by an open space or barrier usually beyond the clear zone. It may be within the highway right of way or within an independent right of way. A bicycle path is appropriate in corridors not served directly by streets and highways, such as along rivers, lakes, abandoned utility or railroad right of way, parks, etc. Cross movement by motor vehicle traffic should be minimal. Sometimes, due to the multiple user types (e.g., walkers, roller bladers, wheel chair users, etc.), they are referred to as multi-use paths. If pedestrian use is intended, a bicycle path in the public right-of-way should generally comply with ADA requirements for public sidewalks (Fed. Register, 6/20/94). See attached design criteria (table 2) and typical section (Fig. 1).

Bicycle Lanes: A bicycle lane is a portion of a roadway which has been designated by striping, signing and pavement markings for the preferential or exclusive use of bicyclists. Bicycle lanes are appropriate where bicycle travel and demand is substantial and/or traffic volumes and speeds are relatively high. They are commonly located on urban collector and arterial routes See typical section (Fig. 2).

Wide Shared Lanes: A right through lane wider than the standard 3.6 m (12 feet) can better accommodate both bicyclists and motorists in the same lane and thus is beneficial to both. This accommodation is most suited to urban and suburban collector and arterial roads. This treatment works best with low traffic volumes and low truck volumes and can be used in other situations where bike lanes are not feasible. A 4.2 m (14 feet) lane is desired for shared use. See typical section (Fig. 2). This width generally will allow a motor vehicle and bicycle to be operated comfortably side by side within the lane. Any width less than 4.2m (14 feet) but wider than 3.6m (12 feet) can be beneficial for shared use by bicyclists and motorists. Widths greater than 4.2 m (14 feet) may encourage the undesirable operation of two motor vehicles in one lane.

Bicycle Lane on Shoulder: Paved shoulders can serve the needs of bicyclists. This treatment is more suitable for rural design. When paved shoulders are signed and marked for use by bicyclists, a minimum 1.2 m (4 feet) operating width should be provided. See typical section (Fig. 2).

B. Bridge

New or reconstructed bridges should generally accommodate bicycle use. Paved shoulders (break-down lanes) often can serve this need adequately. For bridges in areas with pedestrian demand (or expected due to planned development in the area) consideration should be given to providing sidewalks.

C. Maintenance

Adequate maintenance shall be provided on pedestrian and bicycle facilities. Normal maintenance operations of the department will, when feasible, be done with a consideration of the needs of non-motorized users. For instance, resurfacing of travel lanes or paved shoulders should provide a sufficiently smooth surface to accommodate non-motorized traffic.

Prioritization of overall maintenance needs should be based on usage, operations and safety considerations. This prioritization process, for both normal maintenance and for any separate facilities the department maintains, should incorporate the needs of motorists, pedestrians and bicyclists.

D. Traffic

Signing and Marking: Signing and marking should follow the Manual on Uniform Traffic Control Devices (MUTCD). "Share the Road" signs may be used, provided that the community requests installation and there is bicycle traffic on a facility without bicycle accommodations as designated in above Design section.

Signalized intersections: Where pedestrian and/or bicycle activity is present or could be expected through a planning process, signalized intersections should ensure adequate detection and clearance time.

Permitting: When appropriate, local political subdivisions or other corporate entities may construct and maintain pedestrian and/or bicycle facilities along department right of way through the department's permit, or under other approved agreement, process. During the period prior to the development of a comprehensive policy and standards document, project designs should ensure that specific difficulties to non-motorized transportation are not constructed within the system.

Examples of these are as follows:

Grates: All new construction shall be in accordance with AASHTO's Guide for the Development of Bicycle Facilities. Existing grates, in areas with expected bicycle traffic, not compatible with bicycle use should be retrofitted as soon as practicable, or warnings provided.

Rumble strips: MoDOT will examine the use of rumble strips (in the traffic lane and on paved shoulders) where bicyclists can be expected.

Implementation: The Department will review projects that are currently in the planning or design phases to determine if improvements can be made to accommodate this guide.

III. SUMMARY

As stated earlier, this document is intended to provide guidance to the department on considerations to better accommodate pedestrians and bicyclists in the transportation system. If

there are any questions please contact the Pedestrian and Bicycle Program Coordinator or the Design Division.

BICYCLE FACILITIES

	Bicycle Path	**Bicycle Lane**	**Wide Shared Lane**	**Bicycle Lane on, or Bicycle Usage of, Shoulder**
Interstate	Permitted	Not Permitted	Not Permitted	Possible Solution*
Urban Freeway	Permitted	Not Permitted	Not Permitted	Possible Solution*
Principal Arterial	Permitted	Possible Solution	Possible Solution	Possible Solution
Urban Principal Arterial	Permitted	Possible Solution	Possible Solution	Possible Solution
Minor Arterial	Permitted	Permitted	Permitted	Permitted
Urban Minor Arterial	Permitted	Permitted	Permitted	Permitted
Collector	Permitted	Permitted	Permitted	Permitted
Local	Permitted	Permitted	Permitted	Permitted

*This solution should only be considered when all other reasonable alternatives are not practical and this routing is needed to provide continuity of local and cross country bicycle routes. An example would be a major river bridge (such as the Interstate 72 bridge being constructed to replace the US 36 bridge at Hannibal. Based on agreement between MoDOT and IDOT, bicyclists will be allowed and accommodated on this facility from the last Missouri interchange to the first Illinois interchange).